

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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May 29, 2008

TO: Internal File

THRU: Priscilla Burton, Lead *PWB mms*

FROM: Joe Helfrich, Biology, Land Use, Cultural Resources *JH*

SUBJECT: Coal Hollow Application, Alton Coal Development LLC, Coal Hollow Mine, C/025/0005 Task # 2910

## SUMMARY:

On June 14, 2007 the Division received an application for the Coal Hollow surface mine. The application was determined incomplete on August 27, 2007 and resubmitted on January 24, 2008. On March 19, 2008 the application was determined to be administratively complete. This memo will include a review of the Biology, Land Use and Cultural Resource sections of the regulations. In addition this document will include information that addresses the comments from the public hearing and the SUWA.

## **PUBLIC HEARING COMMENTS**

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21 MS. BRYANT: My name is Bobbi Bryant,  
 22 B-r-y-a-n-t. And I've been in communication with Daron,  
 23 a couple of communications via e-mail.  
 24 And I guess I have a couple of questions  
 25 that -- or a couple of items that I would like to have

22

1 clarification.  
 2 And one is -- I know several times it's been  
 3 address- -- I live in Panguitch, by the way, Panguitch,  
 4 Utah, and I own a business there called Bronco Bobbi's  
 5 and used to own one of the historic homes that are  
 6 restored in Panguitch. And I have lived there for 11  
 7 years. And I own a historic building presently.  
 8 It states in the code rules that the Division  
 9 consider the impact of hauling coal through Panguitch,

10 Hatch and Alton.

11 The rules are clear that, in addition to  
12 considering the impact of coal mining and reclamation,  
13 operation to the permit area, the Division must give  
14 equal and full treatment to the adjacent area, the area  
15 outside of the permit area where a resource or resources  
16 determined according to the context in which adjacent  
17 area issues are or reasonably could be expected to be  
18 adversely impacted by the proposed coal mine.

19 And I think you all know the Utah state rules  
20 to that, but if you want me to quote those, I will.  
21 It's Rule 645-301-411.140. And also economics of the  
22 adjacent area is Rule 645-301-411.130.

23 I know that even the Utah State Historic  
24 Preservation Officer and other people have requested  
25 from the Division that this be addressed in the C.R.M.P.

23

1 and in other analysis of this permitting.

2 And, to date, I don't believe any of that has  
3 been done, and that is one of my questions is why? Has  
4 this fallen on deaf ears or are we going to have that  
5 study done?

The CRMP is a Cultural Resource Management Plan that is required by the Bureau of land Management, BLM, when there is federal coal or federal land included in the applicant's Mining and reclamation Plan, MRP. The application for the Coal Hollow mine includes private coal and private land and therefore a CRMP is not required for this application. The State Historic Preservation Officer did suggest that the CRMP include the Historic district of Panguitch. However this comment was made on the premise that the CRMP would include at some point in time the adjacent federal coal and federal surface which to date is not a part of the application being reviewed. The BLM is preparing an Environmental Impact Statement, EIS, for the adjacent federal coal lease. Keith Rigtrup is coordinating this effort and he can be reached at 435 644-4622.

The town of Panguitch is not considered an adjacent area under the R645-301-411.130 or R645-301-320. The Division will forward comments concerning the potential impacts to the town of Panguitch caused by the influx of coal truck traffic and to streams such as Mammoth and Assay creeks that intersect the proposed transportation corridor to the Department of Transportation.

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22 MR. MCMAHAN: My name is Peter McMahan as well  
23 as my wife. She mentioned some of the economic impact.  
24 I worked for the Federal Government for 31 1/2 years,  
25 including eight years with the national parks.

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1 During the late '70s and early '80s at Mesa  
2 Verde National Park, they did a visibility study, of  
3 which I was a part, viewing the changes that were  
4 apparently going on in the Four Corners area.

5 And when the conclusion of that study came  
6 out, it was determined that visibility had significantly  
7 decreased directly related to coal projects, the power  
8 plants and others, and some of the -- the negative  
9 impact that was felt by that region. This is a -- a  
10 matter of public record.

11 I also have a degree, one of my degree's in  
12 biology. I can tell you that with wildlife migrations,  
13 as they instinctively cross the highway -- and having  
14 also worked in Everglades National Park and seeing these  
15 migrations, I can also add very distinctly with studies  
16 that I've participated in, that the wildlife will be  
17 very negatively impacted, especially with the number of  
18 trucks more significantly than what this gentleman  
19 pointed out that would be seen on the highway.

The Division of Wildlife Resources has been consulted and will continue to provide comment on the Application with regard to potential impacts to wildlife migrations.

#### **RESPONSE TO SOUTHERN UTAH WILDERNESS ALLIANCE COMMENTS**

DOGM and the SHPO have completed the consultation for this application, *private*. Consulting party status in the 106 process is a federal action. The SUWA should contact the Bureau of Land Management to request consulting party status.

Cultural resource information for the permit and adjacent area is included in the application.

Vegetation Fish and Wildlife information for the permit and adjacent area is included in the application.

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## **TECHNICAL ANALYSIS:**

# **GENERAL CONTENTS**

## **REPORTING OF TECHNICAL DATA**

Regulatory Reference: 30 CFR 777.13; R645-301-130.

### **Analysis:**

The technical data for the review of the following sections of the application is accompanied by the names of the individuals or organizations responsible for collecting the data, dates of collection, analysis of the data and descriptions of the methodologies used to collect the data.

### **Findings**

The information is adequate to meet the requirements of this section of the regulations.

# **ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

## **HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.12; R645-301-411.

### **Analysis:**

The application for the Coal Hollow Mine includes the following cultural resource information:

- 6/14/07 Cultural Resource Inventory
- 6/14/07 Paleontological Survey
- 6/14/07 Geologic Report of the impacts of Bedrock and Surgical Units on the Distribution of Cultural Resources at the Alton Coal Field
- 6/14/07 Data Recovery Plan for identified Cultural Resources
- 6/25/07 Revised Data Recovery Plan

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- 1/9/08 Draft Outline of Cultural Resource Management Plan, CRMP
- 02/28/08 2<sup>nd</sup> Revision to Data Recovery Plan
- 02/28/08 Excavation Permit Application
- 03/14/08 CRMP
- 05/23/08 Revised CRMP

On November 2, 2007 the Division sent a letter to Dr. Matthew Seddon, State Historic Preservation Officer, requesting concurrence with the Division's determination and eligibility effect determination for the proposed Coal Hollow Mine. Dr. Seddon concurred with the Division's determination by way of correspondence dated November 20, 2007. However, because of adverse impacts and cumulative effects associated with the lease application on federal land, a Cultural Resource Management Plan, (CRMP) is being developed in addition to the Data Recovery plan. To date several revisions to the Data Recovery plan and a Cultural Resource Management Plan, (CRMP), have been submitted to the Division for review and comment. The CRMP dated 05/23/08 and Data Recovery Plan dated 02/28/08 are the documents included in this review.

## CRMP

**Introduction – Page 1** – Because of the need for the CRMP to fully describe the entire project area and the complexity of the issues, this section has been expanded to fully describe the project area and cover the compliance needs of UDOGM, OSM, BLM, and other involved agencies. The additional information required to address these deficiencies noted in the CRMP is included in pages 1 through 3, of the revised CRMP and includes :

1. *A description of the entire project area, making clear the distinctions between private, BLM, and transportation routes.*
2. *A description of the relevant laws (e.g. NEPA, Section 106, Utah Code 9-8-404, etc.) and how they apply to the project.*
  - a. *This description makes the necessary distinctions between directly and indirectly connected actions. Indirect effects, such as transportation are described here.*
  - b. *The involved agencies and their roles are described in this section.*
3. *The section notes that all involved agencies are aware that while not directly connected, the actions are related, and that therefore a comprehensive approach to Section 106 and Utah Code 9-8-404 compliance is being undertaken via this document.*
4. *A summary of the general cultural resources approach as described is included at the conclusion of this section, page 3, paragraph 2.*

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**Effected (sic) Environment – Pages 1 on** –This section has been revised to:

1. *Include the entire project area, including potential transportation routes, with maps, rather than focusing solely on the archaeology.*
2. *Provide a description of the compliance project and associated compliance issues.*
3. *Table 2 includes other cultural resources such as the National Register of Historic Places Historic District in Panguitch.*

**Description of Phases – Page 1 and Page 23-24**

Each phase has been revised to supply data for the subsequent phases. This has been clarified in the current description on page 27 of the CRMP. Phase I is described as “mitigation of immediate impacts,” and the descriptions are more clearly integrated with subsequent phases.

1. *in the introduction, these phases are clearly described with the relationships spelled out directly.*
2. *in the expanded discussion, the way the data from Phase I will tie to subsequent phases has been clarified.*
3. *Either in the CRMP or in the Data Recovery Plan clearly describe how sites x, y, & z (presumably all prehistoric) are expected to relate to the other sites in the BLM area – that is how do the Archaic sites in the private area compare to the Archaic sites in the BLM area and the Proto Historic private to BLM?*

Page 24, paragraphs 2 and 3 of the Data Recovery Plan describe how the prehistoric sites, Archaic, in the private area are expected to relate to the other sites in the BLM area – that is how the Archaic sites in the private area compare to the Archaic sites in the BLM area and the Proto Historic private to BLM.

**Consequences of Project Phases, Phase II, Page 24** – As currently stated this reads “Research would proceed to Phase II, upon Alton Coal Development, LLC’s acquisition of federal coal managed by the Bureau of Land Management.”

Page 27, paragraph 2 of the revised CRMP states that ***“Phase II and III cover the possible federal undertaking resulting from the lease of the Alton Coal Tract...”*** This revised text is correctly stated.

***Please clarify what the relationship is.***

The text on Page 27, paragraph 2 through page 31 of the revised CRMP adequately clarifies the relationship of the project phases of the current private and possible future federal coal tracts.

## DATA RECOVERY PLAN

Many of the comments on the original data recovery plan have been addressed. The review of the most recent Data Recovery Plan submitted on February 28, 2008 indicates that there are deficiencies that need to be addressed before the plan can be approved. They are outlined as follows:

### Research Questions

As currently written, these research questions seem too broad for the collection of sites present. The comments on 12/18/2007 assumed that these questions would actually be for the CRMP where broad over-arching questions forming the context for site-specific research issues should be posed. In the case of these sites, the research questions are so broad that they probably cannot be addressed by the limited range of sites present and the limited work proposed.

***The research questions need to be tailored specifically to the sites in question and for what they can address. Clearly describe how sites x, y, & z (presumably all prehistoric) are expected to relate to the other sites in the BLM area – that is how do the Archaic sites in the private area compare to the Archaic sites in the BLM area and the Proto Historic private to BLM.***

The geomorphological element is key here especially for informing Phase II and III, but again, the real first or otherwise question here is what data do these sites really offer. Also, there aren't any Fremont/Anasazi sites in this phase – how will that inform later questions? Finally, what if the historic site (or the others for that matter) yield data that goes beyond the scope of your original questions? Will those sites proceed to the next phase?

### ***Goal 2 of the original draft, surface and subsurface***

This goal does not appear to be included in the current version of the Data Recovery Plan. It was highly relevant, and was suggested on 12/18/2008 that the question be refined a bit. It was stated that:

***In terms of the surface/subsurface question, which we agreed was good and was at least partially met by the excellent random sampling strategy (a provision for expansion would probably cover most other areas), we suggested further clarification of what that question entails. Thus, instead of simply asking "does the surface represent the subsurface," we recommended elaborating into all the related questions like "Do surface diagnostics reflect overall site dating?" "Are the functional interpretations derived from the surface assemblage supported by the subsurface assemblage?" "Does a site that appears to have significant data based on surface information have such data and what, if any, indicators in the surface***

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***assemblage suggest the presence of significant subsurface deposits?" "How much excavation is necessary in order to obtain a representative sample of subsurface artifacts?" "Can geomorphological evidence be effectively used to determine if the surface and subsurface assemblages are chronologically and functionally related?" And so on. Refining these questions may require slight refinements in the excavation/analysis approach.***

Considering the relevancy in the first draft, it is also relevant for the second draft with some refinement. This question is perhaps the most relevant question that the current collection of the sites can address.

Page 25, paragraph 2 of the Data Recovery Plan describes how the surface and subsurface assemblages have been refined to include differences or similarities.

### **Curation**

MOAC does not have a 2008 Provisional Repository Agreement (although the form has been submitted) with the Utah Museum of Natural History. Has MOAC contacted Kara Hurst, Registrar from the UMNH, and obtained an actual Repository Agreement?

***For the phase I data recovery, there will need to be a legally executed, signed, transfer of title for the prehistoric artifact recovered from private land, which will grant title to the UMNH. Finally, an outline for how historic artifacts will be curated needs to be included.***

This comment is intended as a reminder to the applicant. Page 40 paragraph 3 of the revised Data Recovery Plan includes a description of the curation methods for prehistoric materials. According to the interpretation of the information in this paragraph a detailed field analysis will be conducted for historic period artifacts the applicant does not intend to collect historic materials.

The following comments and suggested changes pertain to the Federal portion or phase II of the CRMP. They need to be addressed prior to entering this phase of the CRMP. The applicant may chose to address these comments and suggested changes during this review process or prior to obtaining a SMCRA permit for additional federal activities.

### **CRMP**

#### **Consequences of Project Phases, Phase I, Page 23 (also, Phase III Page 24)**

The description of the public involvement process on the bottom of this page and on the bottom of Page 24 does not meet the previous suggestions. In an email to the entire project team that was sent on 1/22/2008 it was stated that:



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*Given the high public interest in this project, and the overall size of the potential effects, I recommend that the public be more involved than is usual (i.e. be more than simply the passive recipients of whatever mitigation project we archaeologists deem they are worthy of receiving). I suggest that planning for public input into the research design and excavation approach be established in the CRMP. Let's define "the public" based on the interested parties (more than just USAS, probably also members of the towns of Alton and the surrounding area, tribes, as well as other citizens of the state). Let's then find out what the public are interested in learning and receiving from this project. It's their heritage, their interests should go right into the research design. The public should also be consulted early and often regarding "public mitigation products." We should not simply decide what they want out of it. The CRMP seems to be a good place for laying out a good process for both identifying the relevant public and defining meaningful consultation with that public.*

As currently stated, public involvement has already determined that only USAS chapters are relevant. Furthermore, the public involvement occurs well into mitigation efforts and has already determined a particular public outcome. This does not meet the comments provided above. The CRMP needs to include a public involvement plan that:

- 1. Makes efforts to fully define and identify stakeholders (beyond USAS) who have interests in the cultural resources in this project area. This needs to start at the beginning of the project, not at Phase III (as suggested on Page 24). As currently stated, the Phase I public outcome has already been determined and the only open-ended input will be taken when Phase III is well underway.***
- 2. Provides a process for incorporating public interests and desired mitigation outcomes into the decision of what public products will be part of the project.***

In other words, we need to find the public, listen to what they want, weigh and consider the input, and then provide public output that meets those interests and not what a bunch of professional archaeologists think that some small segment of the public would want.

The following additional comments excerpted from Christopher Hansen's, SHPO, email to Matt Seddon on 5/7/08 are worth noting. As the project develops they will be given consideration:

Right now the historic district comes to mind (what does the NR nomination say about Panguitch and particularly Panguitch's Main Street, does it have character defining features that might be impacted by the intrusion of so many new trucks?), what about vibrations from the trucks--does UDOT or FHWA have any concrete studies? From what I recall Panguitch also had a Main Street program at one time too, clearly the historic character of their downtown has been an important asset to the community.

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**Overarching Research Design (Currently missing from CRMP)**

In the email on 12/18/2007, Lori Hunsaker, PLPCO and Matthew Seddon, SHPO communicated that they:

*... were initially confused about the relationship of the treatment plan to the agreed-upon CRMP. We now understand it as something that will be part of the overall CRMP, and the research design specified in the draft document will basically form the nucleus of the sections of the CRMP research design that cover non-diagnostic open-air lithic scatters and the historic research design.*

Currently there is only a culture history, no research design in the CRMP. The CRMP will need an overarching research design prior to going into Phase II. Assuming that the research questions posed in the current Phase I treatment plan are the “nucleus” as discussed in the comments above, for the moment these could be inserted into the CRMP. However, prior to ultimate finalization of the CRMP, we have the following comments that we recommend be incorporated into this overarching research design:

Previous comments on a draft of this plan were provided in an email to the authors with copies to other team members on 12/18/2007. Comments are confined to areas where those previous comments appear to have not been addressed.

**Research Domains and Questions – Pages 24 on** – A reference to one portion of the Kern report (page 28), and a very general question about “how systems compare” to Coral Canyon, Quail Creek, and Sand Hollow sites (page 28) are included in this section of the CRMP. More refined research questions are required in order to make data recovery and subsequent research more efficient. Therefore the following information needs to be incorporated into the Research Domains and Questions section of the CRMP:

***Research Domains and Questions***

***The broader research design needs to incorporate the spate of recent work (e.g. Kern, Sand Hollow, HRA's work near St. George, Joel Janetski's work in Escalante) that provides refined research questions for the broader region and which are applicable to the Alton Amphitheater/Sink Valley area”.***

***Research Domain 1 – Chronology -***

***Berry, Chapter 27 in Kern Report Vol IV – Page 581 on Virgin Anasazi dating***

***Reed, Chapter 29 in Kern Report Vol IV, Page 601, summarized projectile point model could potentially be tested or data from project could be evaluated in terms of model.***

*Revised chronologies have been proposed by Seddon and Reed, Kern Report Vol VI, Chapter 1, as well as for the Archaic period Vol IV, Chapter 10. These models could be proposed as testable or open to refutation or refinement with specific description of how the data from this area can be used for such issues.*

***Research Domain 2 – Site Function, Use History, and Artifact Distributions –***

*Chapter 11 of the BYU Sand Hollow report describes specific site functional types and models that could be evaluated. These types appear amenable to investigation or testing with data from the project sites.*

*Vol IV, Chapter 22 of the Kern report provides a detailed discussion of Southern Paiute site function and settlement organization and provides a limited test of the model. It seems that the large number of Southern Paiute sites in this project area could really help test this model if the research design were to explicitly consider this research.*

***Research Domain 3 – Subsistence and Environment***

*The Sand Hollow report Chapter 11, pages 422-426 provides a detailed discussion of Virgin Anasazi subsistence that can be used to provide more specific research questions.*

*The Sand Hollow report Chapter 11, pages 426-27 proposes that resource stress results in particular patterns of intensification that the large number of sites in the project area appear directly amenable to addressing.*

*The Sand Hollow report, Chapter 11, pages 428-434 (and referencing a significant body of work) examines questions of Southern Paiute horticulture that the large number of Late Prehistoric sites seem able to address.*

*The Sand Hollow report, Chapter 11, pages 435-439 proposes a model of post-contact Southern Paiute subsistence that the sites in the project area may be able to address.*

*The model of diachronic patterns in faunal exploitation in the Kern report, Vol IV, Chapter 30 and the model of diet breadth through time (Chapter 31) appear to provide fodder for relevant research questions. These questions can be much more refined than the very general questions posed in 3.2 of the draft report.*

***Research Domain 4 – Technology***

*The Kern report, Vol IV, Chapter 34 refines and defines a model of technology and mobility that can be used to develop more refined questions, particularly the conclusions on Page 683.*

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*If thermal features are of interest, as suggested by question 4.2, the Kern report, Vol IV Chapter 9 provides a very explicit model of variation in thermal feature types over time that could be tested if features are found in the project area.*

*Models of pottery manufacture and mobility, such as Simms and Bright and the Kern report, Vol IV, Chapter 17, appear very very relevant to this project area.*

*The Kern report, Vol IV Chapter 38, provides models of trends in ground stone technology that could be used to refine the ground stone technology issue questions (3.3 and to some degree 4.1)*

***Research Domain 5 – Settlement Patterns and Mobility***

*The Sand Hollow report, chapter 11, pages 441-443 provides a number of theoretical models (population packing, hinge points, Virgin Anasazi subsistence, etc.) that while applied in the Sand Hollow report to the St. George Basin do not seem irrelevant here and which could be adapted for this project.*

*Vol IV, Chapter 14 of the Kern report, while comparing Fremont and Virgin Anasazi settlement patterns does provide new models of Virgin Anasazi settlement type that could be explicitly examined via research questions based on the model.*

*Vol IV, Chapter 20 of the Kern report provides a model of Late Prehistoric demography that, given the long time span of the sites in the project area and the large number of Late Prehistoric sites, could be tested with data from the project area.*

*Given the large number of sites and time breadth in the project area, the issues raised in the model of land productivity and hunter gatherer settlement strategies in the Kern Report (Vol IV, Chapter 33) could be adapted or used as the basis for forming more refined questions than the ones currently posed.*

**Findings:**

The information is adequate to meet the requirements of this section of the regulations. pending concurrence from the SHPO.

## VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

### Analysis:

Plant communities within the proposed permit area and reference areas, (*vegetative communities in adjacent areas that represent vegetative communities that will be disturbed*), for these surface mining and reclamation activities are described in Volume 2, Chapter three of the application. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for;

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community
- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes ***"Biomass Production of Plant Communities in the Coal Hollow Permit Area"***. These figures are represented in pounds per acre for each community.

Appendices 3-2 and 3-4 include the methodologies, (*maps, sampling design and transect/quadrat placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species*), results, summary and discussion and color photographs for the referenced communities.

### Findings:

The information is adequate to predict the potential for re-establishing vegetation and the productivity of the land within the proposed permit area for surface coal mining and reclamation

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activities. The information is adequate to meet the requirements of this section of the regulations.

## FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

### Analysis:

Fish and Wildlife information for the permit and adjacent areas is included in Volume 2, Chapter 3, Section 322. Agency consultation and studies conducted are listed on page 3-32 and 3-33. Site specific resource information as described in section **R645-301-322.200** of the regulations is included in the confidential portion of the application.

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. **A brief narrative for each species describing the rationale for their absence and surveys conducted to verify such needs to be included in the application. Example MSO protocol and survey results.**

High Value habitats for black bear, rocky mountain elk, mule deer, and sage grouse are described on page 3-35 of the application. The information is derived from the DWR GIS database indicating that these four species occur within or adjacent to the proposed disturbed area. Additional information for the sage grouse is included in Appendices 3-1 and 3-3.

### Maps and Aerial Photographs

Vegetation communities, reference areas are delineated on drawing 3-1. Drawings 3-2 through 3-5 include the habitat for the high value wildlife species, black bear, rocky mountain elk, mule deer, and sage grouse.

### Findings

The information is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with **R645-301-322**; Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. **A brief narrative for each species describing the rationale for their absence and surveys conducted to verify such needs to be included in the application. Example MSO protocol and survey results.**

## LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

### **Analysis:**

Chapter 4, Section 410 describes the current land uses for the Coal Hollow project. They include zoning for agricultural use, grazing for livestock production, recreation, hunting and wildlife habitat with an average annual precipitation of 16 inches. Drawing 1.3 describes the land status, (private), of the proposed permit area. A description of the land use plan for the private land owners is included in the following paragraphs:

***The Management Plan for the Richard Dame Property***, the current land use of Mr. Dame's property is forage for domestic livestock and some wildlife species. The land includes irrigated pasture for cattle and some horses, native stands of pinyon juniper and sage brush communities as noted on map 3-1, Vegetation. Mr. Dame has expressed an interest to return his property to pasture land that focuses on domestic livestock and includes some plant species for wildlife habitat. Table 3-19 includes the seed mix, native and introduced grasses and forbs, to be planted to meet the landowner's request. A copy of the signed management plan is included in appendices 4-3 and 4-4.

***The Management Plan for the Burton Pugh Property***, the land owned by Mr. Pugh in the permit area provides forage for livestock and some wildlife species as well. The land includes non irrigated pasture land, meadows, sagebrush/grass, pinyon juniper and oak brush communities as noted on map 3-1. The livestock on the property are mostly cattle and sometimes horses. Mr. Pugh has expressed an interest in restoring his land to its original use or better condition for livestock and wildlife habitat. In order to accomplish this pasture lands will be reclaimed with the focus on domestic livestock. The seed mix will include plant species used by wildlife species in addition to native and introduced grasses. A portion of the property will be reclaimed to sage-grouse habitat as well as mined areas that were interspersed with pinyon juniper. A copy of the signed management plan is included in appendices 4-3 and 4-4.

Land capability information is included on page 4-4 of Chapter 4. Chapter 3 describes land capability in terms of percent cover for the vegetative communities in the permit and adjacent areas. The application also includes a description of the land capability in terms of supporting livestock, 1.125 AUM's, (animal unit month) for the Pugh and Dames properties.

### **Findings**

The information is adequate to meet the requirements of this section of the regulations.

## **ALLUVIAL VALLEY FLOORS**

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**Analysis:**

Volume 6, Chapter 7, Appendix 7-7 has been added to the application to address *Alluvial Valley Floors*. This portion of the technical analysis will include a review of the requirements described in sections 302-321.240 and 321.250 and 321,260 of the R645 regulations. Section 5.4.4 refers to table 7 that identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that *“the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques”*. The application will need to include a mitigation plan for restoring water to these areas.

Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth.

Appendix 7-7 does not include a description of the AVF in the adjacent area. According to the analysis of the information in the appendix an AVF is present to the south and west and possibly east of the proposed disturbed area. Appendix 7-7 should be revised to include information for these areas including at a minimum agricultural production.

**Findings:**

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with

**R645-302-321.260**, Appendix 7-7 does not include a description of the AVF in the adjacent area. According to the analysis of the information in the appendix an AVF is present to the south and west and possibly east of the proposed disturbed area. Appendix 7-7 should be revised to include information for these areas including at a minimum agricultural production. •Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**



### **Archeological Site Maps**

Are included in the Data Recovery plan in the confidential section of the application.

### **Cultural Resource Maps**

Are included in the Data Recovery plan in the confidential section of the application.

### **Existing Surface Configuration Maps**

Drawing 5-1 includes the existing surface configuration.

### **Monitoring and Sampling Location Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Permit Area Boundary Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Vegetation Reference Area Maps**

Drawing 3-1 includes the vegetation monitoring and reference area locations permit area boundary and coal ownership boundaries.

### **Findings:**

The information is adequate to meet the requirements of this section of the regulations.

## **OPERATION PLAN**

### **PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES**

Regulatory Reference: 30 CFR784.17; R645-301-411.

### **Analysis:**

According to the archaeological survey performed by Montgomery Archaeological Consultants Inc. there are no public parks within the proposed permit area, (Appendix 4-1).

### **Findings**

The information is adequate to meet the requirements of this section of the regulations.

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## AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

### Analysis:

Appendix 4-2 includes an Air Pollution Control Plan that has been submitted to the Utah Division of Air Quality on May 8, 2007. *The application needs to include written approval of the plan from the Division of Air Quality.*

### Findings

The information is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with; **R645-301-244, -301-420; the application needs to include written approval of the plan from the Division of Air Quality.**

## FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

### Analysis:

#### Protection and Enhancement Plan

Procedures to minimize adverse impacts to fish and wildlife are included in Volume 2, Chapter 3. Section 333, pages 3-40 through 3-43 and appendices 3.1 and 3.3. **Protection**, The application needs to include a wildlife awareness program for the employees that includes avoidance, harassment, situations in transportation corridors, speed limits. **Enhancement**, There is a given assumption that wildlife species will be displaced during the active phase of mining operations. In the case of surface mining, ongoing reclamation measures are intended to offset the displacement or restore the habitat as an enhancement measure beneficial to certain wildlife populations. *The applicant needs to include a narrative that describes how impacts to the habitat for the high value wildlife species, black bear, rocky mountain elk, and mule deer will be mitigated or enhanced during the active phase of mining operations.* The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages should be included, *disturbed area footprint versus habitat enhancement*, in the application.

The main focus of the current application for protection and enhancement is the Greater Sage Grouse, listed as a sensitive species by the DWR heritage group and a candidate species by the USFWS. Appendix 3- ***“Alton Sage-Grouse Habitat Assessment and Mitigation Plan”*** and Appendix 3-3, ***“Sage-Grouse Distribution and habitat improvement Alton, Utah*** are the main documents included in this section of the regulations.

***Alton Sage-Grouse Habitat Assessment and Mitigation Plan***

The data obtained from comparing the leks and roost sites indicates that there are sites with enough similarity that could be used for breeding and roosting areas. ***The applicant needs to include a methodology for relocating the birds to these alternative sites.***

Page 20, paragraph 1, The applicant needs to describe how the ***“Conservation Area will be enhanced for Sage-Grouse especially during the breeding season”***.

Page 20, paragraph 3, ***“Intact sagebrush sites will be cleared of all young Juniper trees”, these areas need to be identified. The applicant may consider adding information to drawing 3-1.***

Page 20, paragraph 3, ***“Juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens”, these areas need to be identified on a vegetation map and quantified in terms of acreages if that is what the applicant intends to do.***

Page 21, paragraph 3, ***“Long term mine plans will remove hundreds of acres of juniper woodlands”. The applicant needs to perhaps quantify this statement. How many acres per year will be removed for the development of Sage-Grouse habitat? Areas need to be listed in the application and delineated on a vegetation map.***

Page 22, paragraph 3, ***“The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable, the applicant needs to include a time table, number of birds and appropriate clearances from DWR, USFWS, BLM***

Page 22 paragraph 3 and page 22 paragraph 1, ***The applicant needs to support this proposed population enhancement by differentiating the populations and providing a time table for capturing and relocating the birds as noted in the previous comment.***

Page 23, paragraph 3, ***the applicant needs to describe the mechanical treatment for controlling invasive species.***

***Sage-Grouse Distribution and habitat improvement Alton, Utah***

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This document includes a mitigation plan to improve sage-grouse habitat, increase bird population levels and maintain optimal habitat for nesting, brood rearing and summer and winter use. Issues discussed include:

- Sage-grouse population and distribution monitoring,
- Results of the 2007 sage-grouse trapping and blood sampling efforts,
- Attempts to lure birds from lek to lek,
- Mitigation implementation strategies,
- Lek search and aerial habitat assessment and,
- Proposed habitat and predator control mitigation.

Page 9, Brood Rearing habitat improvement, *the Division is requesting the applicant to provide an update on the status of the development of the alfalfa field.*

Page 9, Brood Rearing habitat improvement paragraph 2, *has the research on plant insect relationships been completed?*

Page 9, Predator control paragraph 3, *the applicant needs to provide an update on the status of predator control arrangements.*

Page 10, Habitat connectivity, *the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. . What is the projected time frame for providing a corridor that would connect the two populations.*

#### Endangered and Threatened Species

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. As noted in Section 322.210 *A narrative for each species describing the rationale for their absence and surveys conducted to verify such needs to be included in the application. Example MSO protocol and survey results. Threatened and Endangered Plant species are generally described in Appendix 3-4 page 5.*

#### Colorado Fish Recovery Program

According to the information in the application the proposed mining operations are not located within the boundaries of the Upper Colorado River Basin. Therefore the application would not need to include mine water consumption calculations in acre feet per year for the four endangered fish species included in the Colorado Fish Recovery program.

### **Bald and Golden Eagles**

*The applicant needs to address this section of the regulations. This section typically includes a narrative about each species including their status within ½ mile of the proposed disturbed area.*

### **Wetlands and Habitats of Unusually High Value for Fish and Wildlife**

Wetland areas are described on page 3-73 of the application and chapter 7. According to the application there are wetland areas in the permit area. Page 3-73 refers the reviewer to page 3-40 of the application for protection measures for these areas. *The information on page 3-40 does not describe protection and enhancement measures for the wetland areas.*

### **Findings:**

The information is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with; **R645-301-322, -301-333, -301-342, -301-358;**

*The applicant needs to include a narrative that describes how impacts to the habitat for the high value wildlife species, black bear, rocky mountain elk, and mule deer will be mitigated or enhanced during the active phase of mining operations. The applicant could describe the beneficial uses to the referenced species that have been achieved to date by the removal of the Pinyon Juniper. A comparison of acreages should be included, disturbed area footprint versus habitat enhancement, in the application.*

### **Alton Sage-Grouse Habitat Assessment and Mitigation Plan**

The data obtained from comparing the leks and roost sites indicates that there are sites with enough similarity that could be used for breeding and roosting areas. *The applicant needs to include a methodology for relocating the birds to these alternative sites.*

Page 20, paragraph 1, The applicant needs to describe how the “*Conservation Area will be enhanced for Sage-Grouse especially during the breeding season*”.

Page 20, paragraph 3, “*Intact sagebrush sites will be cleared of all young Juniper trees*”, *these areas need to be identified on a vegetation map and quantified in terms of acreages.*

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Page 20, paragraph 3, *“Juniper woodlands surrounding intact stands can be cut back to increase patch size and the amount of area that has potential for nest site selection by hens”, there areas need to be identified on a vegetation map and quantified in terms of acreages.*

Page 21, paragraph 3, *“Long term mine plans will remove hundreds of acres of juniper woodlands”. The applicant needs to perhaps quantify this statement. How many acres per year will be removed for the development of Sage-Grouse habitat? Areas need to be listed in the application and delineated on a vegetation map.*

Page 22, paragraph 3, *“The Alton Sage-Grouse population will be enhanced by importing birds from nearby populations that are relatively large and stable, the applicant needs to include a time table, number of birds and appropriate clearances from DWR, USFWS, BLM*

Page 22 paragraph 3 and page 22 paragraph 1, *The applicant needs to support this proposed population enhancement by differentiating the populations and providing a time table for capturing and relocating the birds as noted in the previous comment.*

Page 23, paragraph 3, *the applicant needs to describe the mechanical treatment for controlling invasive species.*

***Sage-Grouse Distribution and habitat improvement Alton, Utah***

This document includes a mitigation plan to improve sage-grouse habitat, increase bird population levels and maintain optimal habitat for nesting, brood rearing and summer and winter use. Issues discussed include:

- Sage-grouse population and distribution monitoring,
- Results of the 2007 sage-grouse trapping and blood sampling efforts,
- Attempts to lure birds from lek to lek,
- Mitigation implementation strategies,
- Lek search and aerial habitat assessment and,
- Proposed habitat and predator control mitigation.

Page 9, Brood Rearing habitat improvement, *the Division is requesting the applicant to provide an update on the status of the development of the alfalfa field.*

Page 9, Brood Rearing habitat improvement paragraph 2, *has the research on plant insect relationships been completed?*

Page 9, Predator control paragraph 3, *the applicant needs to provide an update on the status of predator control arrangements.*

Page 10, Habitat connectivity, *the applicant needs to provide an update on the status of juniper removal perhaps in terms of acres of restored habitat and a map delineating the restored areas. . What is the projected time frame for providing a corridor that would connect the two populations.*

### **Endangered and Threatened Species**

Threatened, Endangered, and Candidate plant and animal species for Kane County are included in table 3-35. As noted in Section 322.210 *A brief narrative for each species describing the rationale for their absence and surveys conducted to verify such needs to be included in the application. Example MSO protocol and survey results. Threatened and Endangered Plant species are generally described in Appendix 3-4 page 5.*

### **Bald and Golden Eagles**

*The applicant needs to address this section of the regulations. This section typically includes a narrative about each species including their status within ½ mile of the proposed disturbed area.*

### **Wetlands and Habitats of Unusually High Value for Fish and Wildlife**

Wetland areas are described on page 3-73 of the application and chapter 7. According to the application there are wetland areas in the permit area. Page 3-73 refers the reviewer to page 3-40 of the application for protection measures for these areas. *The information on page 3-40 needs to include protection and enhancement measures for the wetland areas.*

## **VEGETATION**

Regulatory Reference: R645-301-330, -301-331, -301-332.

### **Analysis:**

Vegetation communities are described in Volume 2, Chapter three of the application. The descriptions include acreage, percent of total by community, total living cover, percent cover by shrubs, grasses, forbs and woody plant species, for;

- The proposed Disturbed Sagebrush/Grass Community
- The Sagebrush/Grass Reference Area
- The Proposed Disturbed Meadow (Dry) Community
- The Meadow (Dry) Reference Area
- The Proposed Disturbed Pinyon-Juniper Community

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- The Pinyon-Juniper Reference Area
- The Proposed Disturbed Pasture Land Community
- The Pasture Land Reference Area
- The Proposed Disturbed Oak brush Community
- The Oak Brush Reference Area
- The Proposed Disturbed Meadow Community
- The Meadow Reference Area
- Other Meadow Communities

Tables 3-1 through 3-33 include living cover and frequency by plant species, total cover and composition and woody species density. Table 3-34 includes ***“Biomass Production of Plant Communities in the Coal Hollow Permit Area”***. These figures are represented in pounds per acre for each community.

Appendices 3-2 and 3-4 include the methodologies, *(maps, sampling design and transect/quadrat placement, cover and composition, woody species density, sample size and adequacy, statistical analyses, photographs and threatened and endangered plant species)*, results, summary and discussion and color photographs for the referenced communities.

Page 15, Threatened & Endangered Plant Species Survey, ***the applicant needs to include a description of the T&E plant species survey, and a narrative that describes the species, location, elevation, soil type, moisture requirements, and the presence or absence of each species. Threatened and Endangered Plant species are described in Appendix 3-4 page 5. This deficiency is noted in the environmental resource and fish and wildlife information sections.***

### Findings:

The information is adequate to meet the requirements of this section of the regulations.

## RECLAMATION PLAN

### GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.



**Analysis:**

The reclamation plan for the Coal Hollow surface mine is included in Chapter 3, Sections 340 through 358.530, pages 44 through 74. The application includes a description of reclamation and protection measures and techniques to be implemented in order to achieve reclamation success of the areas disturbed by surface mining activities.

**Findings:**

The information in the application is adequate to meet the requirements of this section of the regulations.

**POSTMINING LAND USES**

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

**Analysis:**

The post mining land use for the areas to be mined is described in Volume 2, Chapter 4, and Pages 4-6 through 4-9. Assuming the permittee implements the reclamation plan as described in the MRP the post mining land use should be achieved. There are two land owners of the permit area, Richard Dame and Burton Pugh. The applicant and DOGM staff have consulted with them regarding their interests in the final outcome of the reclamation efforts. Management plans for each land owner are described on Pages 4-7 and 4-8 of Chapter 4.

*The Management Plan for the Richard Dame Property*, the current land use of Mr. Dame's property is forage for domestic livestock and some wildlife species. The land includes irrigated pasture for cattle and some horses, native stands of pinyon juniper and sage brush communities as noted on map 3-1, Vegetation. Mr. Dame has expressed an interest to return his property to pasture land that focuses on domestic livestock and includes some plant species for wildlife habitat. Table 3-19 includes the seed mix, native and introduced grasses and forbs, to be planted to meet the landowner's request. A copy of the signed management plan is included in appendices 4-3 and 4-4.

*The Management Plan for the Burton Pugh Property*, the land owned by Mr. Pugh in the permit area provides forage for livestock and some wildlife species as well. The land includes non irrigated pasture land, meadows, sagebrush/grass, pinyon juniper and oak brush communities as noted on map 3-1. The livestock on the property are mostly cattle and sometimes horses. Mr. Pugh has expressed an interest in restoring his land to its original use or better condition for livestock and wildlife habitat. In order to accomplish this pasture lands will be reclaimed with the focus on domestic livestock. The seed mix will include plant species used by wildlife species

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in addition to native and introduced grasses. A portion of the property will be reclaimed to sage–grouse habitat as well as mined areas that were interspersed with pinyon juniper. A copy of the signed management plan is included in appendices 4-3 and 4-4.

Reclamation of the County Road, *the application needs to include documentation from the County and the landowners that addresses the reclamation of the county road in the permit area after mining has been completed.*

#### Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with

R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275, the application needs to include documentation from the County and the landowners that addresses the reclamation of the county road in the permit area after mining has been completed. [JH]

## PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

#### Analysis:

The application includes measures to be taken to protect fish wildlife and related environmental values during reclamation operations in chapter 3, Sections 358 through 358.530, pages 72 through 74 including :

- Threatened and Endangered Species,
- Eagles,
- Removal of a Threatened & Endangered Species,
- Riparian and Wetland Areas,
- Powerline and Transmission Facilities,
- Fences and Conveyers and,
- Toxic-Forming Areas.

This section states that *“The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials”*. In the event other appropriate methods are deemed necessary the application needs to include a commitment to consult with DOGM, biologists from the DWR and other appropriate entities to determine the scope of other appropriate methods to exclude wildlife.

Chapter 5, Section 521.125, page 5-8 states that ***“The MRP does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments. With that in mind it appears as though the previous statement, “The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials”, is referring to the sediment ponds although sediment ponds do not typically contain hazardous or toxic forming materials. The application needs to describe which ponds may contain hazardous or toxic forming materials and what those materials are.***

### **Findings:**

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with

**R645-301-333, -301-342, -301-358;** this section, 358.530, page 3-74, states that “The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials”. ***In the event other appropriate methods are deemed necessary the application needs to include a commitment to consult with DOGM, biologists from the DWR and other appropriate entities to determine the scope of other appropriate methods to exclude wildlife.***

Chapter 5, Section 521.125, page 5-8 states that ***“The MRP does not contemplate construction of any permanent water impoundments; coal processing waste banks and coal processing waste dams or embankments. With that in mind it appears as though the previous statement, “The Coal Hollow Project will fence, cover, or use other appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic forming materials”, is referring to the sediment ponds although sediment ponds do not typically contain hazardous or toxic forming materials. The application needs to describe which ponds may contain hazardous or toxic forming materials and what those materials are.***

## **CONTEMPORANEOUS RECLAMATION**

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

### **Analysis:**

Chapter 3, pages 3-44 and 3-57 and Chapter 5, pages 5-59 through 5-65 include some contemporaneous reclamation information. Section 341.100 on page 3-44 states that “4

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*detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP*". Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. ***Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan.***

#### Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with **R645-301-352, -301-553**; Section 341.100 on page 3-44 states that ***"A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP"***. Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. ***Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan.***

## REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

#### Analysis:

##### Revegetation: General Requirements

The revegetation portion of the reclamation plan for the Coal Hollow surface mine is included in Chapter 3, Sections 341 through 358.530, pages 44 through 74.

##### Revegetation: Timing

Chapter 5 of the application includes a detailed description of the completion of each major step in the mining process. Accordingly no more than 40 acres will be disturbed at any given time. Section 341.100 on page 3-44 states that ***"A detailed schedule and timetable for the completion of each major step in the mine plan has been included in Chapter 5 of the MRP"***. Chapter 5 includes a detailed description of each step in the surface mining process. However there are no schedules or timetables included in chapter 5 that are pertinent to contemporaneous reclamation. ***As noted in the section under Contemporaneous Reclamation, Chapter 5 needs to be revised to include a detailed schedule and timetable for each major step in the mine plan.***

### **Revegetation: Mulching and Other Soil Stabilizing Practices**

Mulching techniques are described in Section 341.230, page 3-53 of the application. According to this information mulch will not be applied to the reclaimed pasture land. Granted this area is relatively flat and one of the primary uses of mulch is to control erosion. However there are additional beneficial uses for mulch. *According to the United States Department of Agriculture research paper, Reclamation on Utah's Emery and Alton coal fields: Techniques and Plant Materials, INT-335, June 1985, page 24, "At the end of the first growing season, frequency of grass plants averaged 92 percent on the ripped area where hay had been rotovated into the soil surface compared to 52 percent on ripped areas receiving no hay amendment.* Accordingly it seems reasonable for the applicant to consult with the division's soils and biology staff regarding mulch or soil amendments for the pasture land areas. ***The applicant also needs to explain how water will initially get to the reclaimed pasture areas as there are no commitments in the plan to irrigate these reclaimed areas.***

### **Revegetation: Standards For Success**

Standards for success are described in Section 356, pages 3-62 through 3-65 of the application. They will follow the requirements of R645-301-353 and "Appendix A, Vegetation Information Guidelines". Criteria for determining success include: Cover, Shrub Density, Frequency, Production and Diversity.

### **Findings:**

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with, **R645-301-353, -301-354, -301-355, -301-356;** According to this information mulch will not be applied to the reclaimed pasture land. Granted this area is relatively flat and one of the primary uses of mulch is to control erosion. However there are additional beneficial uses for mulch. *According to the United States Department of Agriculture research paper, Reclamation on Utah's Emery and Alton coal fields: Techniques and Plant Materials, INT-335, June 1985, page 24, "At the end of the first growing season, frequency of grass plants averaged 92 percent on the ripped area where hay had been rotovated into the soil surface compared to 52 percent on ripped areas receiving no hay amendment.* Accordingly it seems reasonable for Division to require the applicant to consult with the division's soils and biology staff regarding mulch or soil amendments for the pasture land areas. ***The applicant also needs to explain how water will initially get to the reclaimed pasture areas as there are no commitments in the plan to irrigate these reclaimed areas.***

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## MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

### Analysis:

The application needs to include the following maps:

**Affected Area Boundary Maps**

**Reclamation Monitoring And Sampling Location Maps**

**Reclamation Treatments Maps**

### Findings:

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with **R645-301-323**; the application needs to include the following maps:

**Affected Area Boundary Maps**

**Reclamation Monitoring And Sampling Location Maps**

**Reclamation Treatments Maps**

## OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302- 323, 324.

### Analysis:

Volume 6, Chapter 7, Appendix 7-7 has been added to the application to address *Alluvial Valley Floors*. This portion of the technical analysis will include a review of the requirements described in sections 302-321.240 and 321.250 and 321,260 of the R645 regulations. Section 5.4.4 refers to table 7 that identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that *“the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques”*. The application will need to include a mitigation plan for restoring water to these areas.

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Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth.

**Findings:**

The information in the application is not adequate to meet the requirements of this section of the regulations. Prior to approval the following information must be provided in accordance with **R645-302-321.260;**

Section 5.4.4 refers to table 7 that identifies the characteristics of the meadow and dry meadow plant communities as being conducive to sub-irrigation. Section 6.4 states that *“the topographic characteristics of most lands within the project area are compatible with flood irrigation techniques”*. The application will need to include a mitigation plan for restoring water to these areas.

*Plates 3 and 4 include color infrared aerial imagery taken in July of 2006 and November of 2007. Although the imagery was used extensively by the researchers in various disciplines, the application needs to include an analysis of the two plates to show late summer and fall differences between upland and valley floor vegetative growth.*

**RECOMMENDATIONS:**

The application is not recommended for approval at this time.